

WHAT IS CLAIMED IS:

1. A lithographic apparatus comprising:
  - an illumination system that provides a beam of radiation;
  - a support structure that supports a patterning structure, the patterning structure configured to impart the beam of radiation with a pattern in its cross-section;
  - a substrate support that supports a substrate; and
  - a projection system that projects the patterned beam onto a target portion of the substrate, the illumination system comprising
    - a radiation-production system that produces extreme ultra-violet radiation, wherein particles produced as a by-product of extreme ultra-violet radiation production move substantially in a particle-movement direction; and
    - a radiation-collection system that collects the extreme ultra-violet radiation, the radiation-collection system being arranged to collect extreme ultra-violet radiation which radiates in a collection-direction, the collection-direction being substantially different from the particle-movement direction.
2. A lithographic apparatus according to claim 1, wherein the radiation-production system comprises two oppositely chargeable electrodes that generate an electric field therebetween, and the electric field substantially follows an axial direction of the radiation-production system.
3. A lithographic apparatus according to claim 2, wherein the collection-direction is a radial direction of the radiation-production system.
4. A lithographic apparatus according to claim 2, wherein at least one of the electrodes is substantially ring-shaped, and an axis of each ring-shaped electrode substantially coincides with the axial direction of the radiation-production system.

5. A lithographic apparatus according to claim 2, wherein the radiation-collection system has an optical axis substantially parallel to the axial direction of the radiation-production system.

6. A lithographic apparatus according to claim 2, wherein the radiation-collection system has an optical axis substantially parallel to the radial direction of the radiation-production system.

7. A lithographic apparatus according to claim 1, wherein the radiation-collection system comprises an optical system that provides the projection beam of radiation.

8. An illumination system for providing a beam of radiation, the illumination system comprising:

a radiation-production system that produces extreme ultra-violet radiation, wherein particles produced as a by-product of extreme ultra-violet radiation production move substantially in a particle-movement direction; and

a radiation-collection system that collects the extreme ultra-violet radiation, the radiation-collection system being arranged to collect extreme ultra-violet radiation which radiates in a collection-direction, the collection-direction being substantially different from the particle-movement direction.

9. An illumination system according to claim 8, wherein the radiation-production system comprises two oppositely chargeable electrodes that generate an electric field therebetween, and the electric field substantially follows an axial direction of the radiation-production system.

10. An illumination system according to claim 9, wherein the collection-direction is a radial direction of the radiation-production system.

11. An illumination system according to claim 9, wherein at least one of the electrodes is substantially ring-shaped, and an axis of each ring-shaped electrode substantially coincides with the axial direction of the radiation-production system.

12. An illumination system according to claim 9, wherein the radiation-collection system has an optical axis substantially parallel to the axial direction of the radiation-production system.

13. An illumination system according to claim 9, wherein the radiation-collection system has an optical axis substantially parallel to the radial direction of the radiation-production system.

14. An illumination system according to claim 8, wherein the radiation-collection system comprises an optical system that provides the projection beam of radiation.

15. A method for providing a beam of radiation, comprising:  
producing extreme ultra-violet radiation and generating particles as a by-product of said production of extreme ultra-violet radiation, said particles moving substantially in a particle-movement direction; and  
collecting extreme ultra-violet radiation that radiates in a collection direction, said collection direction being substantially different from said particle-movement direction.

16. A method according to claim 15, further comprising:  
generating an electric field along said particle-movement direction.